

Mission Incident
Santa Paula, CA
Preliminary Summary of Air Monitoring Results
December 11, 2014

Prepared by
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Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vac truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for December 11, 2014 07:00 to December 12, 2014 07:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted for chlorine (Cl_2), hydrogen sulfide (H_2S), hydrochloric acid (HCl), percent of the Lower Explosive Limit (LEL), oxygen (O_2), peroxides, particulate matter (10 micron particles, PM_{10}), sulfur dioxide (SO_2), sulfuric acid (H_2SO_4), and volatile organic compounds (VOCs), with instruments such as Gastec® pumps with chemical-specific colorimetric tubes, RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors, and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area, at fixed locations in the surrounding community, and along the perimeter of the facility in the community. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, fixed community real-time air monitoring locations, aerial site photo, and roaming monitoring are included in Appendix A.

CTEH® monitored RAESystems® AreaRAE units with ProRAE Guardian system at four locations on the fence line of the facility within the work area and an additional unit near frac tanks near a designated decon area. AreaRAEs were equipped with sensors to detect VOCs, LEL, H_2S , and SO_2 . Three detections of H_2S were reported at AreaRAE Unit 02; however, these detections were reported as instantaneous. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

Particulate monitors were data-logged along the facility perimeter collocated with AreaRAE stations 1, 2, 3, and 4. Table 3 summarizes data-logged PM_{10} data from these units.

Table 1: Manually-Logged Real-Time Air Monitoring Summary¹
December 11, 2014 07:00 – December 12, 2014 07:00

Location Category	Analyte	Instrument	No. of Readings	No. of Detections	Avg. of Detections	Detection Range ²
Community	Cl ₂	Gastec 8La	11	0	NA	<0.05 ppm
	H ₂ S	MR+ / MR Pro	32	0	NA	<1 ppm
	HCl	Gastec 14L	11	0	NA	<0.05 ppm
	LEL	MR+ / MR Pro	32	0	NA	<1 %
	O ₂	MR+ / MR Pro	31	31	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	11	0	NA	<0.1 ppm
	PM ₁₀	AM510/Dusttrak	32	32	0.022	0.008 - 0.053 mg/m ³
	SO ₂	MR+ / MR Pro	32	0	NA	<0.1 ppm
	H ₂ SO ₄	Gastec 35	11	0	NA	<0.2 mg/m ³
	VOC	MR+ / MR Pro	32	0	NA	<0.1 ppm
Exclusion Zone	Cl ₂	Gastec 8La	1	0	NA	<0.05 ppm
	H ₂ S	MR+ / MR Pro	3	0	NA	<1 ppm
	HCl	Gastec 14L	1	0	NA	<0.05 ppm
	LEL	MR+ / MR Pro	3	0	NA	<1 %
	O ₂	MR+ / MR Pro	3	3	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	1	0	NA	<0.1 ppm
	SO ₂	MR+ / MR Pro	3	0	NA	<0.1 ppm
	H ₂ SO ₄	Gastec 35	1	0	NA	<0.2 mg/m ³
	VOC	MR+ / MR Pro	3	0	NA	<0.1 ppm
Work Area	Cl ₂	Gastec 8La	6	0	NA	<0.05 ppm
	H ₂ S	Gastec 4LL	1	0	NA	<0.1 ppm
		MR+ / MR Pro	28	0	NA	<0.1 ppm
	HCl	Gastec 14L	7	0	NA	<0.05 ppm
	LEL	MR+ / MR Pro	28	0	NA	<1 %
	O ₂	MR+ / MR Pro	26	26	20.9	20.9 - 20.9 %
	Peroxides	Gastec 32	8	0	NA	<0.1 ppm
	PM ₁₀	AM510/Dusttrak	19	19	0.015	0.003 - 0.062 mg/m ³
	SO ₂	Gastec 5Lb	1	0	NA	<0.1 ppm
		MR+ / MR Pro	12	0	NA	<0.1 ppm
	H ₂ SO ₄	Gastec 35	8	0	NA	<0.2 mg/m ³
	VOC	MR+ / MR Pro	29	0	NA	<0.1 ppm

¹Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.

²Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.

Table 2: AreaRAE Air Monitoring Summary¹
December 11, 2014 07:00 – December 12, 2014 07:00

Unit ID	Analyte	No. of Readings	No. of Detections	Avg. of Detections	Detection Range ²
Unit 01	H ₂ S	4984	1	0.1 ppm	0.1 - 0.1 ppm
	LEL	4984	0	NA	< 1 %
	SO ₂	4984	0	NA	< 0.1 ppm
	VOC	4984	0	NA	< 0.1 ppm
Unit 02	H ₂ S	5315	6	1.4 ppm	0.1 - 3.3 ppm
	LEL	5315	0	NA	< 1 %
	SO ₂	5315	0	NA	< 0.1 ppm
	VOC	5315	8	0.3 ppm	0.1 - 1.0 ppm
Unit 03	H ₂ S	5320	243	0.1 ppm	0.1 - 0.1 ppm
	LEL	5320	0	NA	< 1 %
	SO ₂	5320	0	NA	< 0.1 ppm
	VOC	5320	1	0.2 ppm	0.2 - 0.2 ppm
Unit 04	H ₂ S	2377	164	0.1 ppm	0.1 - 0.1 ppm
	LEL	2377	0	NA	< 1 %
	SO ₂	2377	0	NA	< 0.1 ppm
	VOC	2377	0	NA	< 0.1 ppm
Unit 06	H ₂ S	1692	0	NA	< 1 ppm
	LEL	1692	0	NA	< 1 %
	SO ₂	1692	0	NA	< 0.1 ppm
	VOC	1692	32	0.1 ppm	0.1 - 0.2 ppm

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²Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.

Table 3: AM510 PM₁₀ Monitoring Summary¹
December 11, 2014 07:00 – December 12, 2014 07:00

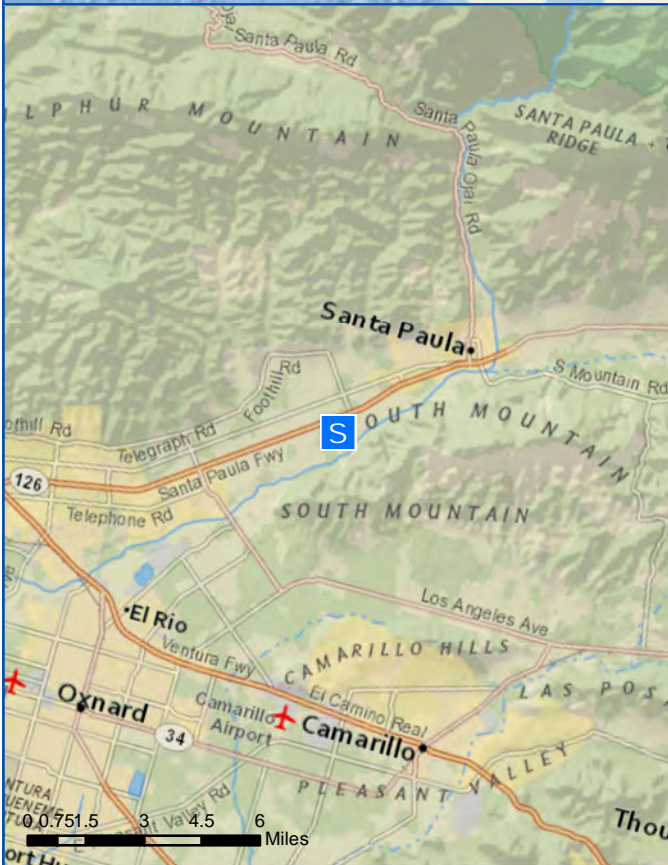
Serial No.	Location	No. of Readings	No. of Detections	Avg. Detection	Detection Range
10601072	AR01	3019	3019	0.025	0.004 - 0.322 mg/m ³
10408087	AR02	2613	2613	0.045	0.003 - 0.835 mg/m ³
10704074	AR03	2638	2638	0.028	0.006 - 0.332 mg/m ³
10704072	AR04	2655	2655	0.025	0.008 - 0.129 mg/m ³

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Appendix A

Incident Maps:

Real-time Air Monitoring Locations and Incident Site



Legend
 Site Location

0 250 500 1,000
Feet



Legend

- FRT Location
- Site Location

0 50 100
Feet





Legend

Monitoring Location

- Non-detect (< 0.1 ppm)
- S Incident Site

0 0.125 0.25 0.5 Miles





Legend

Monitoring Location

- Non-detect (< 0.1 ppm)
- S Incident Site



Legend

Monitoring Location

- Detect (0.003 - 0.062 mg/m³)
- S Incident Site





Legend

Monitoring Location

- Detect (20.9 %)
- S Incident Site



Legend

Monitoring Location

- Non-detect (< 1 %)
- S Incident Site



Legend

Monitoring Location

- Non-detect (< 0.05 ppm)
- S Incident Site

0 0.125 0.25 0.5 Miles





Appendix B:

AreaRAE Trend Graphs, AM510
Trend Graphs, and
AreaRAE/AM510 Air Monitoring
Location Map

0 50 100
Feet





AR01

AR02

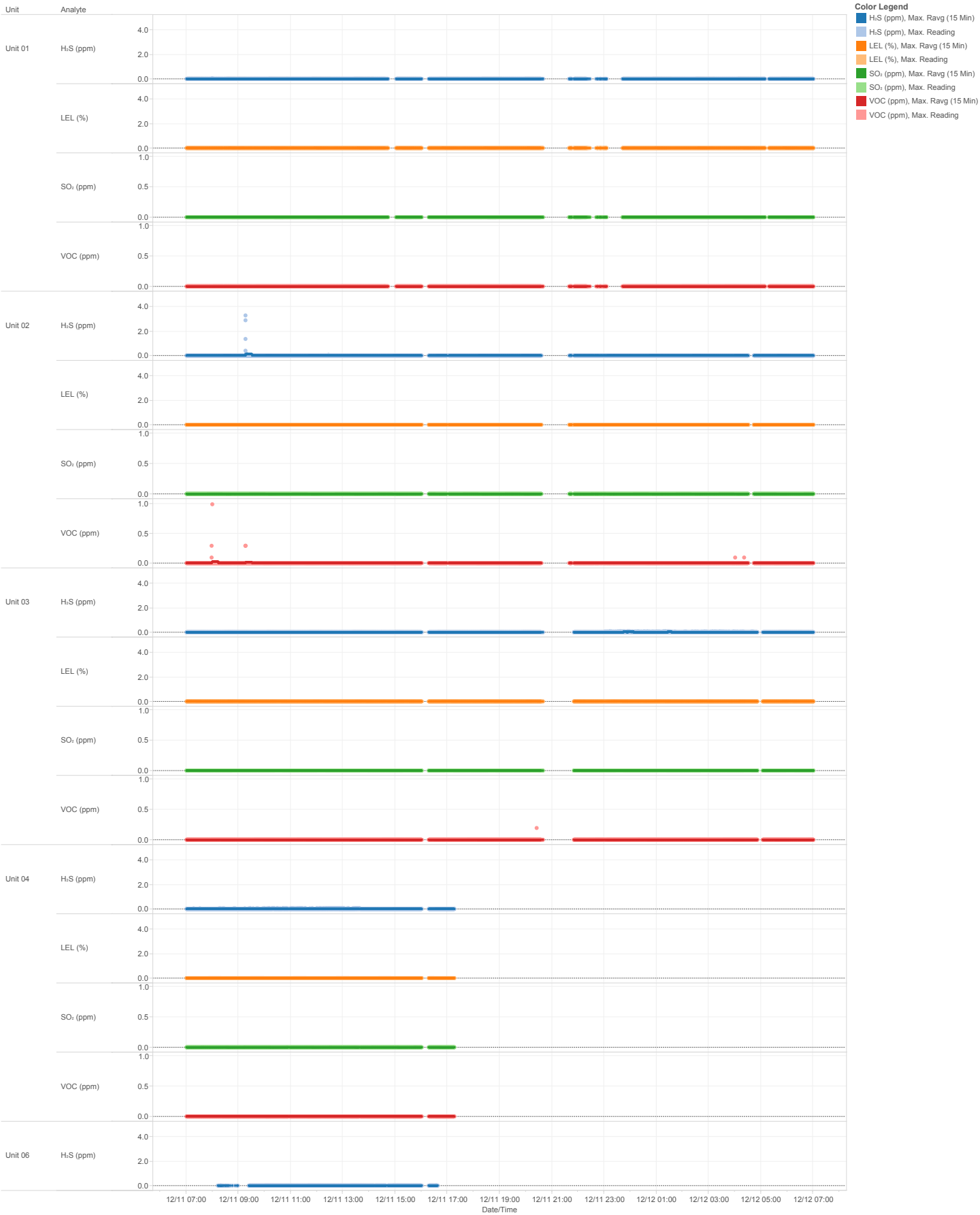
AR04

AR06

AR03

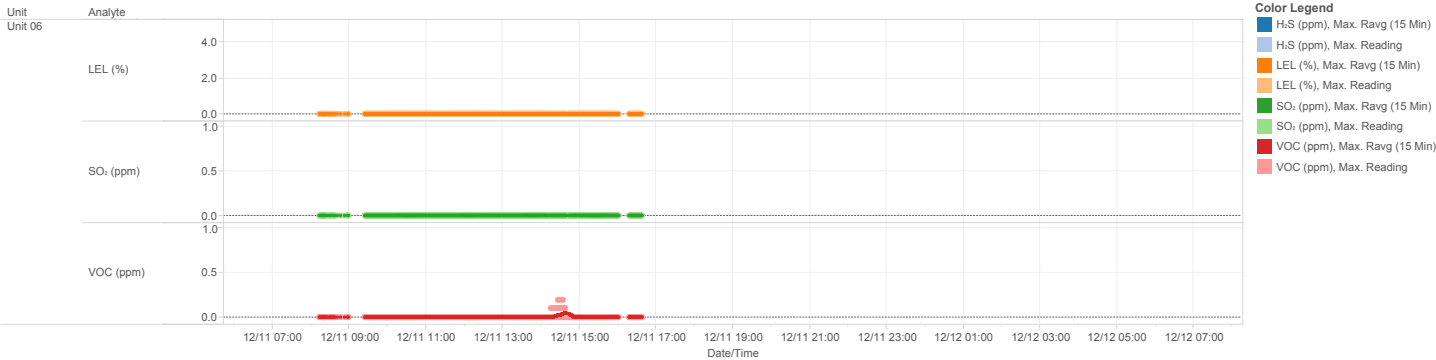
- Legend
-  AreaRAE & AM510 Station
 -  AreaRAE Station

Patriot Environmental
AreaRAE Trend Graphs
12/11/2014 07:00 - 12/12/2014 07:00



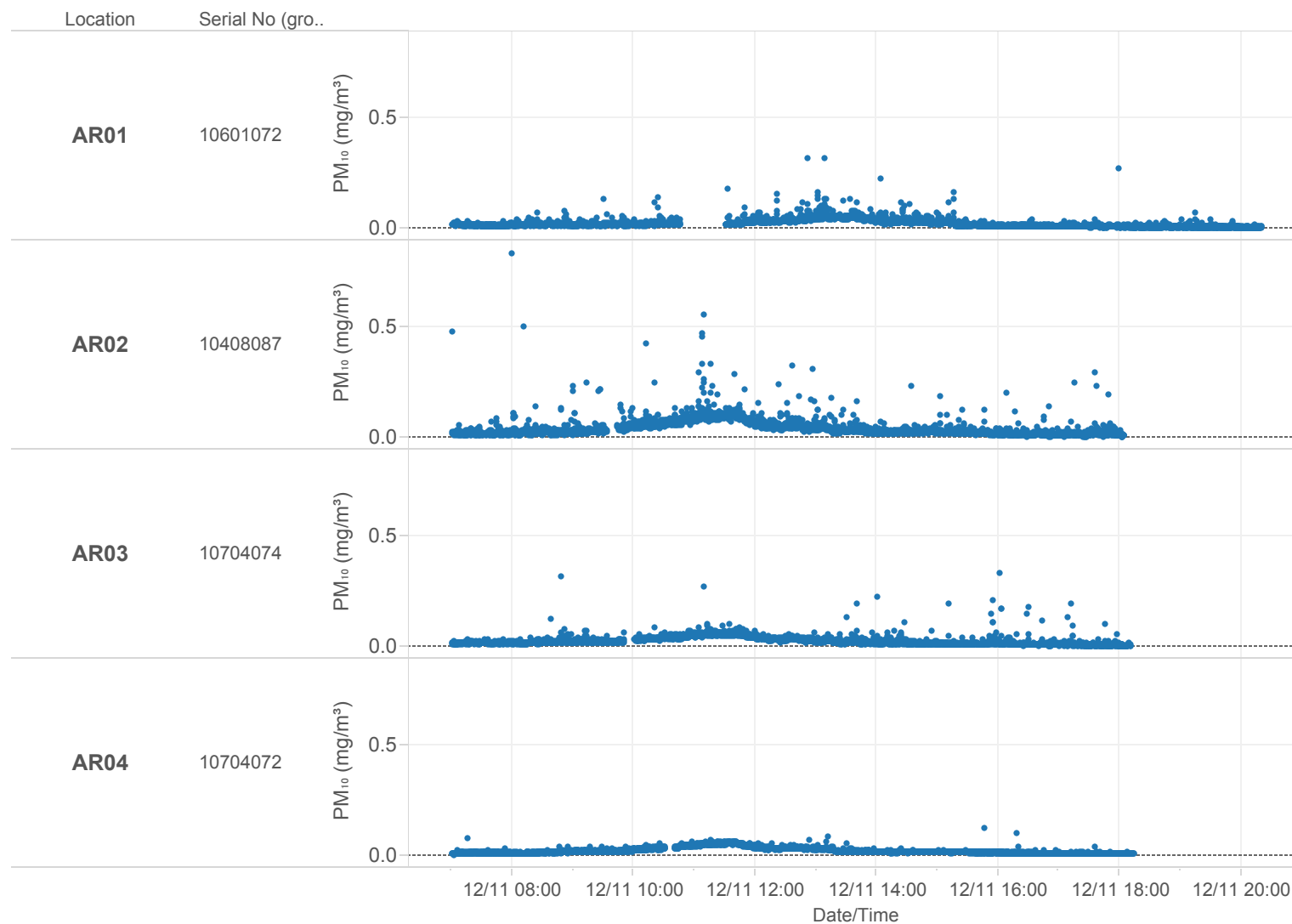
- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
AreaRAE Trend Graphs
12/11/2014 07:00 - 12/12/2014 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
MISSION INCIDENT
Datalogged AM510 (PM₁₀) Summary
12/11/2014 07:00 - 12/12/2014 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format